The numerical range of a matrix is a set of complex numbers that contains all the eigenvalues of the matrix. It is used for instance to estimate a matrix norm. This thesis is about the numerical range of an interval matrix. In the theoretical part, we examine its properties. We prove for example that it is NP-hard to find out whether a given point lies in the numerical range. On an example, we show that field of values of an interval matrix is not necessarily convex. The thesis contains descriptions of two algorithms for visualization of the convex hull of the numerical range. Both of them are only suitable for matrices of small sizes due to high time complexity. Therefore we also present a polynomial algorithm for computing the upper bound of the numerical range. In the practical part, we implement the algorithms as functions in the Matlab language.